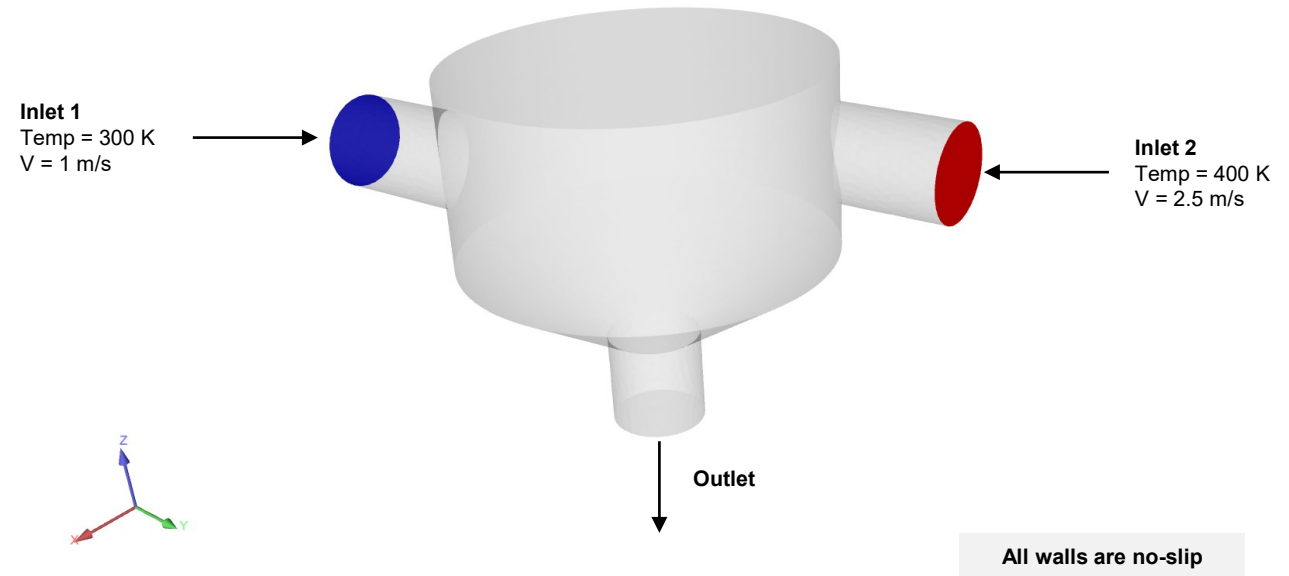


Problem definition

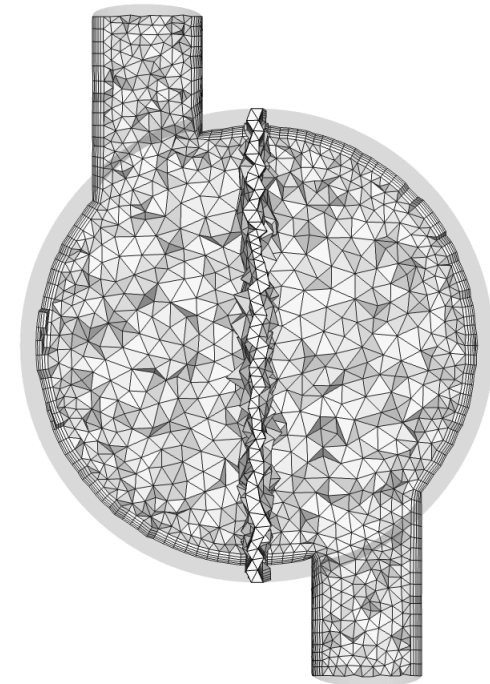
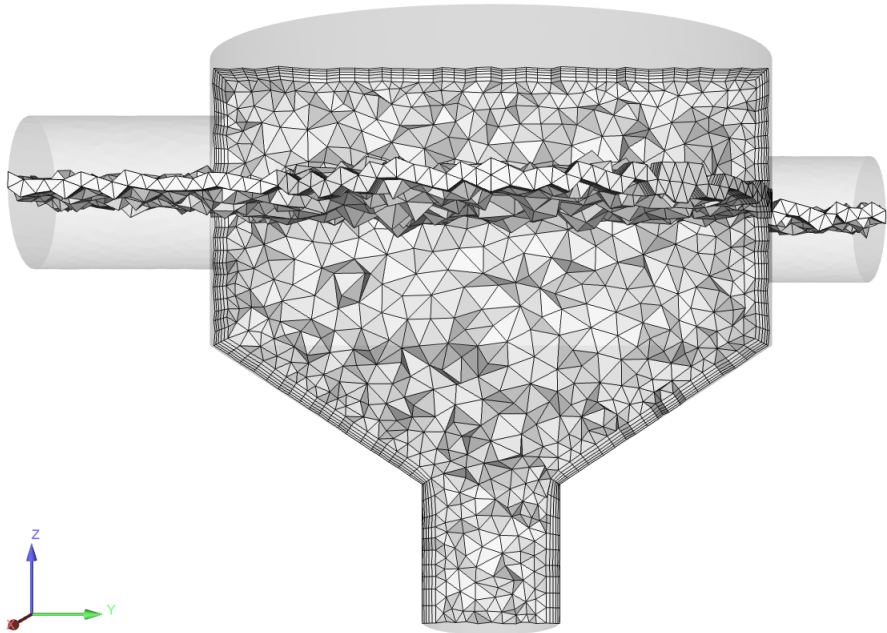
Static mixer

- This is a demonstration case (therefore, there is no validation data).
- We will use this case to study the effect of the curvature correction on swirling flows.
- Use a RANS model of your choice (with default option).
- Use air with default values (constant properties).
- Set reports for average temperature and velocity at the outlet.
- Monitor flow imbalance.
- Use a solution method of your choice.
- Then, do some qualitative postprocessing.
- Run with and with no curvature corrections and compare the outcome.



Problem definition

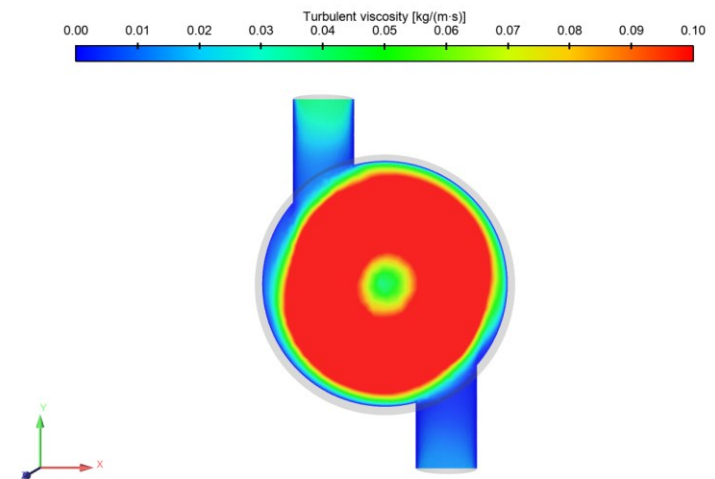
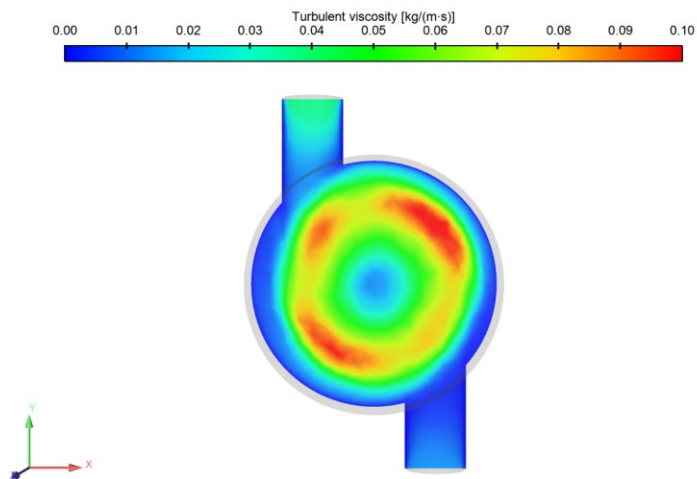
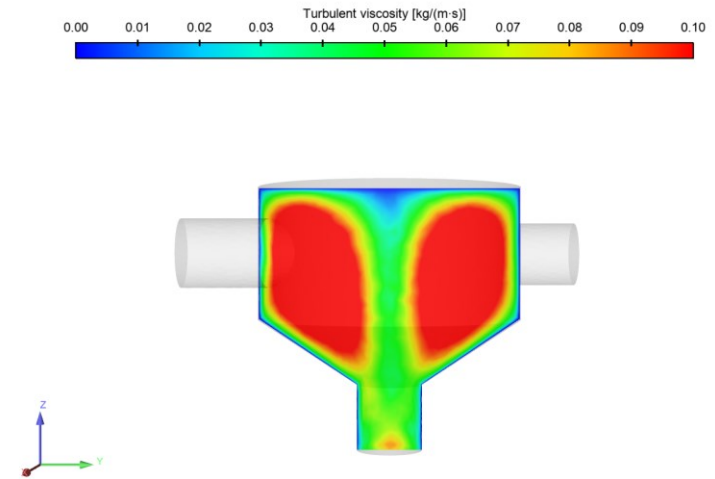
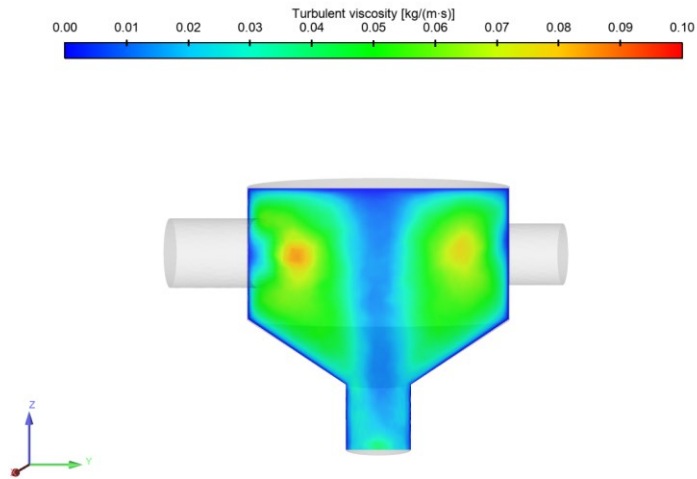
Geometry and mesh



- This is a wall modeling mesh.

Qualitative and quantitative results

A study of the effect of curvature correction on swirling turbulent flows

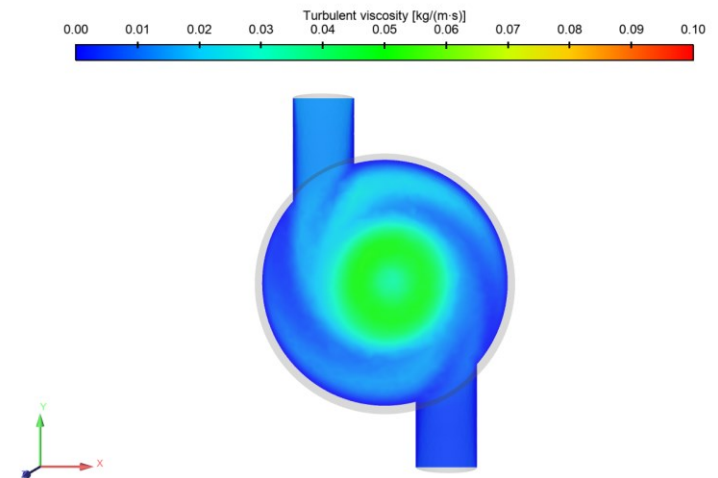
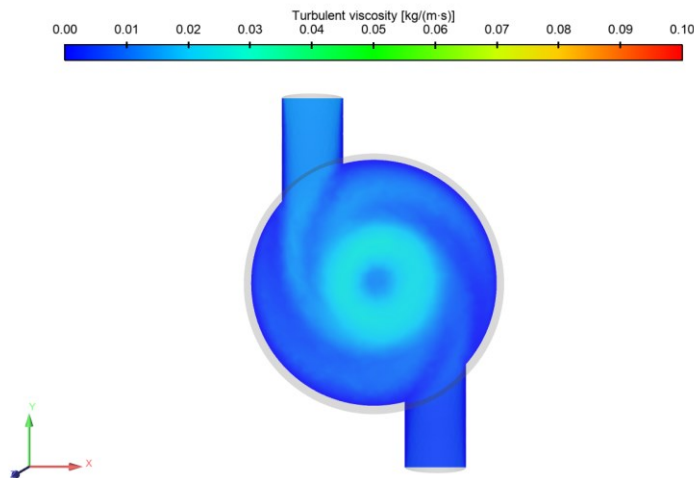
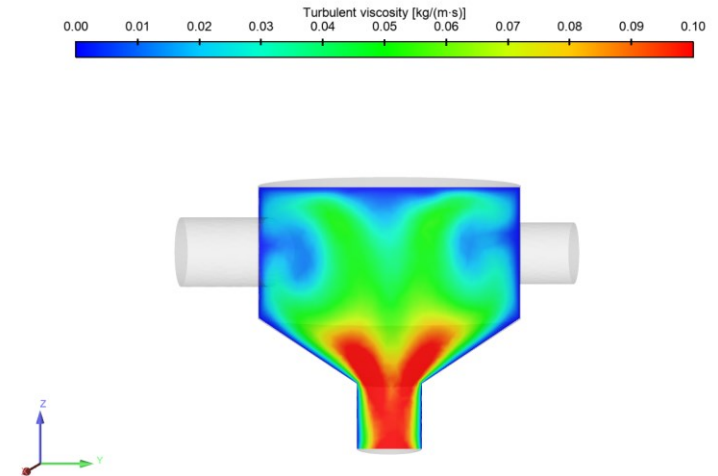
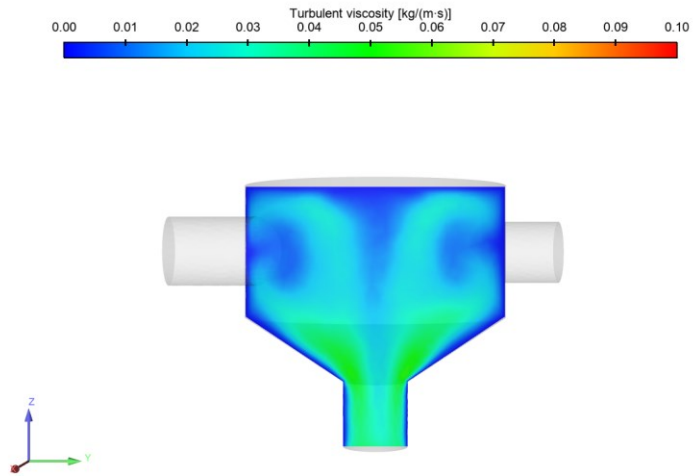


k-epsilon realizable with curvature correction

k-epsilon realizable with no curvature correction

Qualitative and quantitative results

A study of the effect of curvature correction on swirling turbulent flows

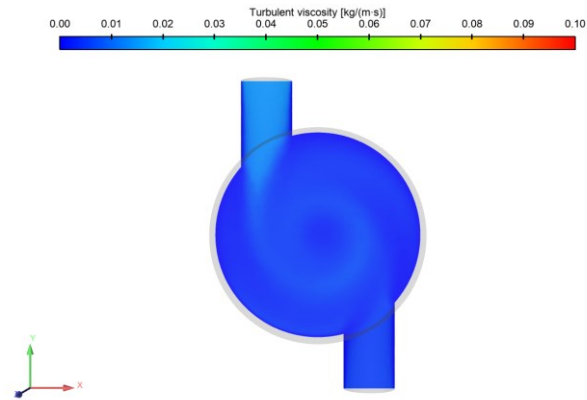


k-omega with curvature correction

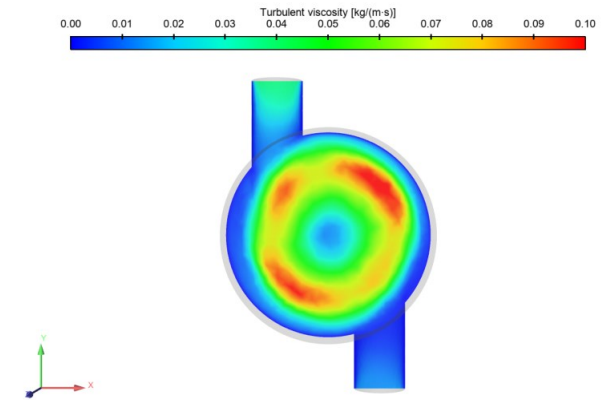
k-omega with no curvature correction

Qualitative and quantitative results

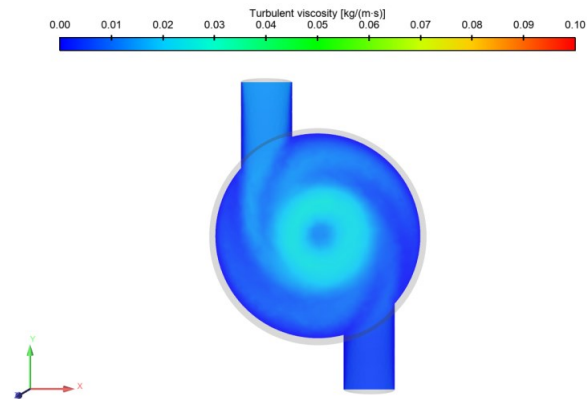
A study of the effect of curvature correction on swirling turbulent flows



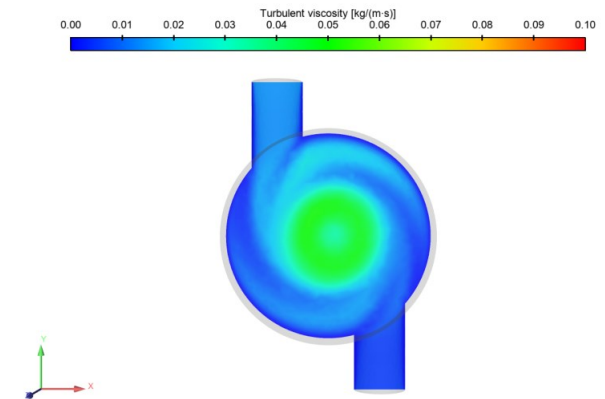
RSM



k-epsilon realizable with curvature correction



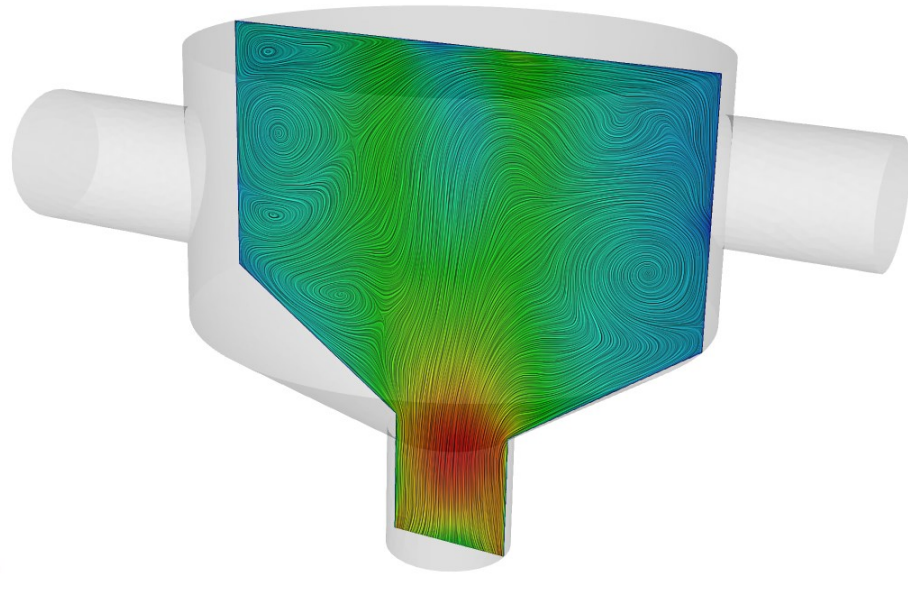
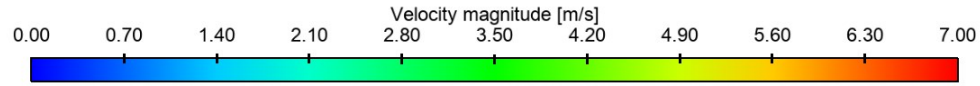
k-omega with curvature correction



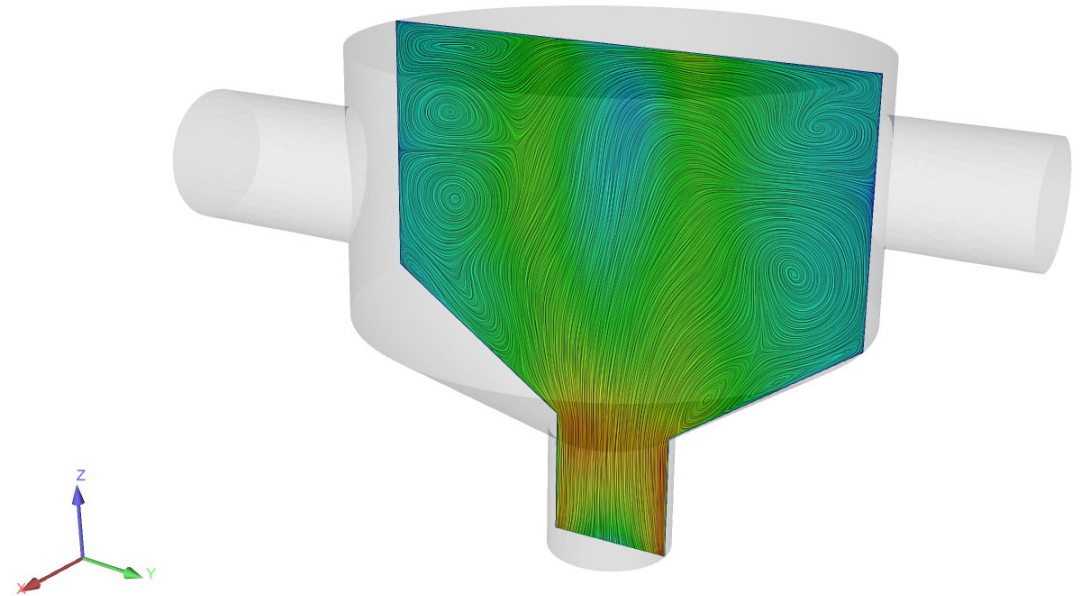
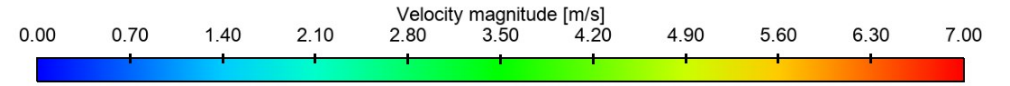
k-omega with no curvature correction

Qualitative and quantitative results

A study of the effect of curvature correction on swirling turbulent flows



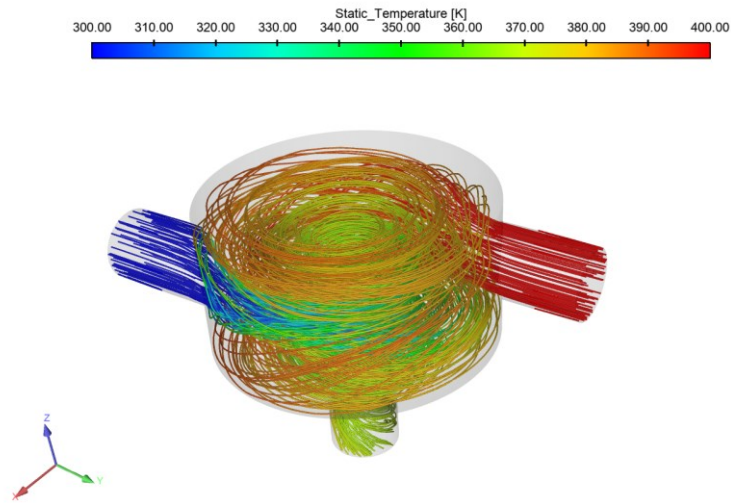
RSM – Surface streamlines colored using velocity magnitude



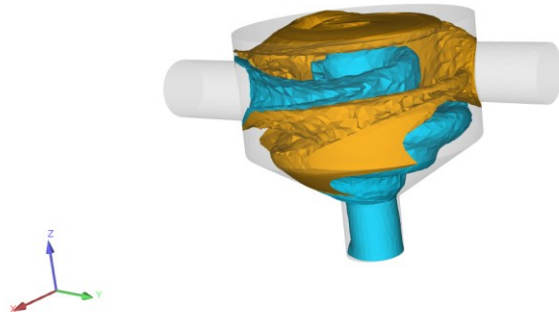
K-omega with curvature correction – Surface streamlines colored using velocity magnitude

Qualitative and quantitative results

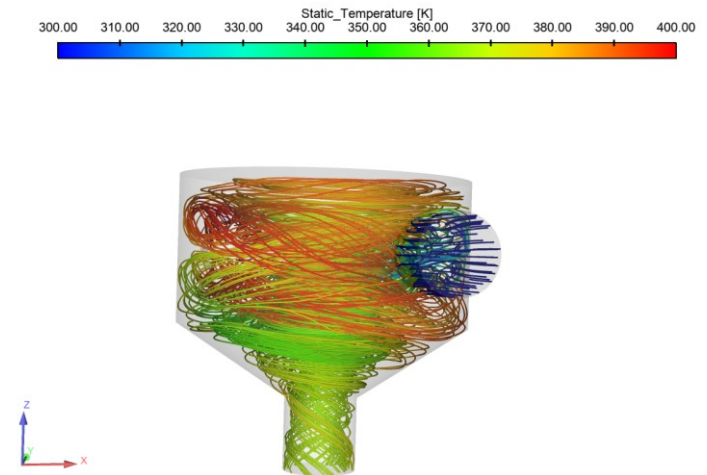
A study of the effect of curvature correction on swirling turbulent flows



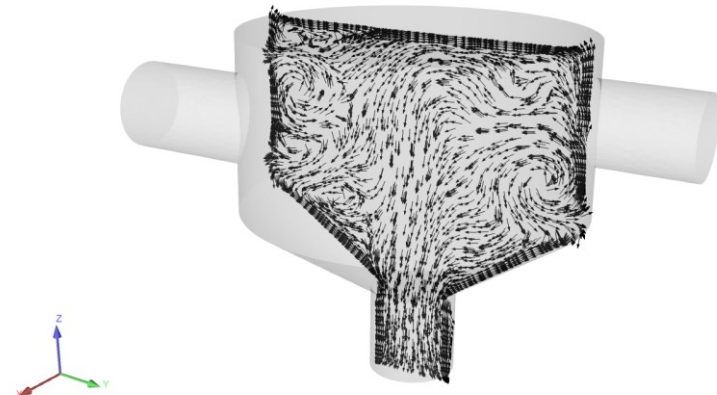
Streamlines colored using temperature field



Iso-surfaces of temperature (370 and 385 degrees)



Streamlines colored using temperature field



Velocity vectors